

## On the Classification of the Order SYMPHYLA.

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As far back as 1882, in a note on the "Genera of the Scolopendrellidæ,"\* J. A. Ryder shows that there are two forms, stating that "the first has the body very slender, tapering anteriorly, with the eyes or stemmata placed on the upper surface of the narrow, elongate head; the second form has a broader, more robust body of nearly uniform width anteriorly and posteriorly, with the eyes or stemmata at the sides of the head and not visible from above, the head itself being nearly circular or sub-quadrate in outline from above.

"The first is the type to which we may assign the old designation of *Scolopendrella* originally proposed for it by Gervais †; the second, of which Newport's species (i. e., *immaculata*) becomes the type, may be distinguished generically from the first, as pointed out above, under the name of *Scutigerebella*. The latter form is also distinguished from the first by the much greater development of the basal appendages of the legs."

Hansen ‡, in his excellent 'Monograph of the Order Symphyla' (established as an order by Ryder in 1880) says (p. 23): "The group consists of one single family with two genera," but in a footnote he adds, with some significance, "Some zoologist will perhaps soon establish these genera as families, and divide each of them into two or more genera."

Since Hansen's work was published in 1904 single species have been described by Imms, Silvestri, and Attems, whilst I have had the pleasure of examining very rich English material comprising no less than fourteen species and have just received numerous tubes of Oriental material.

Prior to the appearance of Hansen's monograph Silvestri § diagnosed a new genus, *Symphylella*, for the species of *Scolopendrella* in which the first pair of legs is absent, with *isabellæ*, Grassi, as type. He also figured and described *Scolopendrella notacantha*, Gervais, and *S. pygmæa*, sp. n., species which agree in the possession of the first pair of legs, but which in my opinion are more strongly separated than *pygmæa* and *isabellæ*. This paper was not noticed by Hansen, and I am inclined to think that *Scol. subnuda*, Hansen, will prove to be synonymous with *S. pygmæa*, Silvestri.

In working out my material I have come to the conclusion that the genera *Scutigerebella* and *Scolopendrella* as diagnosed by Hansen represent two

\* Proc. U.S. Nat. Mus. v. (1882) p. 235.

† Ann. Sci. Nat. sér. 3, Zool. ii., 1844.

‡ "The Genera and Species of the Order Symphyla," Quart. Journ. Micr. Sci. xlvii., 1904.

§ In Berlese's 'Acari, Myriop. et Scorp. huc. in Italia rep.,' fasc. xevi., 1902.

main groups, here treated as subfamilies but which might in future be readily given family rank, and that each contains at least three strongly characterized genera.

In the Scutigerellinæ (as I propose to name the first group) I was fortunate enough to collect two new species of the *immaculata*-group, which makes it safe to deal with *immaculata* as a type distinct from the *nivea*-group. In fact, although Hansen (*in litt.*) has always regarded *Scutigerella* as more difficult to deal with than *Scolopendrella*, this material has enabled me to tabulate the genera of the Scutigerellinæ in unmistakable characters.

In *Scutigerella*, s. str., the postero-median cavity of the last dorsal scutum is peculiar and is endorsed by the absence of the long outstanding antero-lateral or lateral scutular setæ. In this genus we find two species each possessing a distinctive character which does not reappear in succeeding groups,—*armata*, Hansen, having each fore-femur armed with a distinct tooth, and *biscutata*, Bagn., possessing a pair of plate-like prolongations hinged to the 13th dorsal scutum.

The second genus, *Neoscutigerella*, is erected for the English species *S. Hanseni*, Bagn., and in the character of its scutular setæ stands alone. The absence of the postero-median cavity of the last abdominal setæ precludes its reception in the genus *Scutigerella*, but here, too, the possession of longer, outstanding, and presumably sensory setæ is not shown. A second species of this genus (from Ceylon) is in my possession.

In the third and last genus, *Hanseniella*, the long outstanding setæ of the scuta appear for the first time, and this feature is continued throughout the genus and throughout the genera of the second subfamily, Scolopendrellinæ. In the subgenus *Scolopendrelloides* (which may ultimately be split off from *Hanseniella*, s. str.), as exemplified by two species, we find three common characteristics of which two are noteworthy. Firstly the somewhat deep postero-median depressions of the last scutum suggests the curious cavity in *Scutigerella*, whilst the shorter exopods of the posterior legs lead one naturally to the Scolopendrellinæ.

*Scolopendrella*, s. str., in the well-developed legs of the first pair present a connecting link also, and this pair in the next genus, *Scolopendrellopsis*, is there also but smaller, and in *Symphylella* is obsolete. Whilst I have accepted Silvestri's genus *Symphylella*, I should here point out that as yet I have not succeeded in perceiving any valuable character other than the absence of its first pair of legs to warrant its separation from *Scolopendrellopsis* (but I have only examined the one species *subnuda*, Hansen), whilst from my table it will be seen that these genera cannot possibly be included in the genus *Scolopendrella*, being separated by the strongest morphological characters.

I name the genus *Hanseniella* in honour of one of our foremost zoologists, Dr. H. J. Hansen, of Copenhagen, whose friendship and help I am proud to acknowledge.

Family SCOLOPENDRELLIDÆ.

Species usually larger and more robust, with the first pair of legs always well developed and more than half the length of the following pair; the exopods well developed and conspicuous.

Posterior margins of all the dorsal scuta but the last slightly rounded or emarginate, with angles generally broadly rounded, rarely angular (but when angular each lobe is several times broader than long).

Dorsal surface of the hind pair of legs usually furnished with numerous setæ. Cerci simple, that is, without striped terminal area or transverse lines at apex. . . . . Subfamily SCUTIGERELLINÆ, mihi.

2. Species smaller and more slender, with the legs of the first pair rarely more than one-half the length of those of the following pair (*S. notacantha* is the only exception), and more usually vestigial; none of the exopods well developed.

Posterior margins of all the dorsal scuta but the last one produced into a pair of triangular plates.

Dorsal surface of the hind pair of legs furnished with very few setæ. Cerci usually with a striped terminal area, and often, in addition, with raised transverse lines on the most distal part outside the area.

Subfamily SCOLOPENDRELLINÆ, mihi.

Subfamily SCUTIGERELLINÆ, mihi.

1. Last dorsal scutum with a very deep and somewhat large cavity overlapped anteriorly and situated in the middle of the posterior margin. No long outstanding setæ on lateral margins of scuta . . . . . Genus SCUTIGERELLA, Ryder.

Last dorsal scutum without such median cavity. . . . . 2.

2. All setæ on scuta, excepting an antero-marginal pair on the first scutum, short, blunt, and fusiform . . . . . Genus NEOSCUTIGERELLA, nov.

All setæ normal. The second scutum (and certain others) furnished with at least one pair of longer, forwardly or laterally directed, latero-marginal setæ . . . . . Genus HANSENIELLA, nov.

*a.* The last scutum slightly depressed posteriorly along the middle. The exopods of posterior legs well developed. The setæ on the inner side of the proximal antennal joints directed obliquely forwards and, at most, about one and one-half times as long as the setæ on the outer side . . . . . Subgenus HANSENIELLA, s. str.

*b.* The last scutum with a deep postero-median depression. The exopods of posterior legs short, at most much shorter than the depth of tarsus. Some setæ on the inner side of the proximal antennal joints nearly vertical to the longitudinal axis of the antennæ and unusually long, the longest at least two and one-half times as long as the setæ on the outer side . . . . . Subgenus SCOLOPENDRELLOIDES, nov.

## Subfamily SCOLOPENDRELLINÆ, mihi.

1. First pair of legs well-developed, of normal shape and more than two-thirds the length of the following pair. Hind margin of each scutum with a distinct longitudinally striate belt between the pair of triangular processes. Cerci without the raised transverse lines at the most distal part. Central cephalic rod interrupted before the middle and there branching shortly to either side ..... Genus SCOLOPENDRELLA, Gervais.

First pair of legs reduced in size or (more usually) obsolete. Hind margins of scuta without striate belts. Cerci with raised transverse lines at the most distal part opposite to the terminal area. Central cephalic rod interrupted before the middle, but not branched laterally ..... 2.

2. First pair of legs present, not more than one-half the length of the following pair ..... Genus SCOLOPENDRELLOPSIS, nov.

First pair of legs obsolete, represented by a pair of rudimentary wart-like protuberances, without claws even ..... Genus SYMPHYLELLA, Silv.

*Species of the Order SYMPHYLA.*

## Subfamily SCUTIGERELLINÆ, Bagnall.

Genus SCUTIGERELLA, Ryder.

Species IMMACULATA (Newp.), *armata*, Hansen, *spinipes*, Bagn., and *biscutata*, Bagnall.

Genus NEOSCUTIGERELLA, Bagnall.

Species HANSENI (Bagn.).

Genus HANSENIELLA, Bagnall.

Subgenus HANSENIELLA, s. str.

Species *unguiculata* (Hansen) \*, *subunguiculata* (Imms) †, *caldaria* (Hansen), *orientalis* (Hansen), *plebeia* (Hansen), *ruwenzorii* (Silvestri) ‡, NIVEA (Scop.), *chilensis* (Hansen), *capensis* (Hansen), and *angulosa* (Hansen).

Subgenus SCOLOPENDRELLOIDES, Bagnall.

Species CRASSICORNIS (Hansen), and *pauperata* (Hansen).

\* Gravely names a subspecies *indica*, of which I shall have something to say later.

† Journ. Linn. Soc. Lond., Zool. xxx., 1909.

‡ Torino Boll. Mus. Zool. ed. Anat. vol. xxii., 1907. I have not yet seen the description.

## Subfamily SCOLOPENDRELLINÆ, Bagnall.

Genus SCOLOPENDRELLA, Gervais.

Species NOTACANTHA, Gervais.

Genus SCOLOPENDRELLOPSIS, Bagnall.

Species MICROCOLPA (Muhr), *pygmæa* (Silv.), *subnuda* (Hansen)\*, and *silvestrii* (Hansen).

Genus SYMPHYLELLA, Silvestri.

Species ISABELLÆ (Grassi), *dunelmensis* (Bagn.), *jacksoni* (Bagn.), *texana* (Hansen), *vulgaris* (Hansen), *horrida* (Bagn.), *neotropica* (Hansen), *simplex* (Hansen), *delicatula* (Bagn.), *minutissima* (Bagn.), *pusilla* (Hansen), *brevipes* (Hansen), and *antennata* (Hansen).\* Perhaps synonymous with *pygmæa*.[NOTE.—I have not seen Graf Attems' description of his *Scutigera* *indecisa* from South-West Australia, and have therefore been unable to include it in the above list.—R. S. B., 23rd July, 1913.]